

5        INTRAOPERATIVE MONITORING OF TEMPERATURE-INDUCED TISSUE CHANGES  
              WITH A HIGH-RESOLUTION DIGITAL  
              X-RAY SYSTEM DURING THERMOTHERAPY

              ABSTRACT OF THE DISCLOSURE

10            A method of thermally inducing and monitoring changes to localized regions of tissue  
              illuminating a volume of tissue with a first beam of X-rays, detecting the portions of the first  
              beam of X-rays that passed through the volume of tissue, generating a first X-ray image signal  
              from the portions of X10 rays of the first beam detected, applying heat to at least a localized  
              region of tissue within the volume of tissue after the illuminating and after the detecting,  
15        illuminating the volume of tissue with a second beam of X-rays, detecting portions of the second  
              beam of X-rays that passed through the volume of tissue during the illuminating with the second  
              beam of X-rays, generating a second X-ray image signal from the portions of X-rays of the  
              second beam detected, and generating a difference image signal based upon a comparison of the  
              first and second X-ray image signals. The difference image signal provides information of  
20        changes in X-ray attenuation by localized regions of tissue within the volume of tissue due to the  
              application of heat.